

REMARKS

Claims 1-36 are pending. The Examiner rejected claims 1-36 under § 112, first paragraph, as failing to comply with the enablement requirement. Reconsideration and allowance of all of the claims are requested.

In the specification, paragraph [0020] has been amended to correct minor editorial problems. The word “a” was changed to “the” since “a first oxygen concentration” was previously referred to in the paragraph. The words “the second oxidant in” were inadvertently omitted from the original application and are inserted in paragraph [0020] by this Amendment. Since paragraph [0020] mirrors the language in claim 1 of the original application and the words “the second oxidant in” appear in claim 1, it is clear that those words were inadvertently omitted from paragraph [0020]. Applicants also note that the inserted language in the corrected sentence in amended paragraph [0020] is consistent with similar language in paragraphs [0026], [0027], [0029], [0032], [0033], [0038], [0039], [0041], and [0044], as well as the language in claims 1, 11, 12, 15, 18, 19, 29, 30, 33, and 36. No new matter is added by the amendments to the specification.

The § 112 Rejection

The Examiner rejected claims 1-36 under § 112, first paragraph, as failing to comply with the enablement requirement. In support of this rejection, the Examiner stated:

The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is mostly nearly connected, to make and/or use the invention. Claim 1 refers to and at least a portion of the first oxidant from the at least one predominant stream of the first oxidant in the barrel of the cyclone combustor or slagging cyclone

combustor continues having the first oxygen concentration which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most clearly connected to make and/or use the invention. (Emphasis added).

Applicants respectfully disagree and request that the § 112 rejection be withdrawn, since their application complies fully with the enablement requirement. “The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation.” *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, USPQ2d 1217, 1223 (Fed. Cir. 1988) (patent for bone growth stimulator device was enabling even though it did not disclose the level of current so as to minimize fibrous tissue formation; adjusting current so as to minimize fibrous tissue formation in other parts of the living being reasonably apprised those skilled in the art of the bounds of the claimed invention and was as precise as the subject matter permitted), cited in MPEP 2164.01 (Test of Enablement).

In the instant case, the highlighted phrase above which the Examiner contends is “not described in the specification in such a way as to enable one skilled in the art... to make and/or use the invention” is only part of a limitation and must be considered within the context of the complete limitation.¹ In fact, the highlighted phrase which the Examiner focuses on must be considered in the context of the whole claim. *See*, MPEP 2164.08 which states in relevant part: “The examiner should

¹ The complete limitation in claim 1 is: “feeding at least one stream of a second oxidant having a second oxygen concentration greater than the first oxygen concentration into the barrel of the cyclone combustor at a second flowrate and in a selective manner, whereby a portion of the first oxidant in the barrel of the cyclone combustor combines with at least a portion of the second oxidant in the barrel of the cyclone combustor, thereby forming a combined oxidant having a combined oxygen concentration greater than the first oxygen concentration and less than the second oxygen concentration, and at least a portion of the first oxidant from the at least one predominant stream of the first oxidant in the barrel of the cyclone combustor continues having the first oxygen concentration.”

determine what each claim recites and what the subject matter is when the claim is considered as a whole, not when its parts are analyzed individually.” (Emphasis in original). Also, “When analyzing the enabled scope of a claim, the teachings of the specification must not be ignored because claims are to be given their broadest reasonable interpretation that is consistent with the specification.” *Id.*

When claim 1 is read as a whole in view of Applicants’ disclosure, especially the drawings, it is clear that Applicants have satisfied the enablement requirement for their claimed invention. In the method of claim 1, three streams are fed into the barrel of the cyclone combustor - - a stream of a fuel, a stream of a first oxidant, and a stream of a second oxidant. The stream of the first oxidant has a first oxygen concentration of about 21 vol. % (e.g., air) and is fed at a first flowrate. The stream of the first oxidant has a “predominant stream” of the first oxidant. The stream of the second oxidant has a second oxygen concentration greater than the first oxygen concentration and is fed at a second flowrate in “a selective manner.” When the first oxidant and the second oxidant combine in the barrel, they form a combined oxidant having a combined oxygen concentration, but at least a portion of the first oxidant from the predominant stream of the first oxidant in the barrel “continues having the first oxygen concentration.” In other words, at least some of the first oxidant fed to the barrel in the predominant stream does not combine with the second oxidant.

Applicants’ application discloses and illustrates at least ten (10) embodiments of their invention, as shown in Figures 3A through 6C. Using the disclosures discussed and illustrated for these embodiments in the application, coupled with information known in the art, persons skilled in the art could make and use the invention without undue experimentation.

For example, Figures 6A, 6B, and 6C show clearly how a stream of a second oxidant 36 (e.g., oxygen) can be fed into the barrel 20 via a lance 17 extending through a secondary air inlet 18 into which is fed the first oxidant (e.g., air). Because of the “selective manner” in which the second oxidant is fed into the barrel (*i.e.*, as shown in Figures 6A-6C), complete diffusion of the stream of

the second oxidant throughout the stream of the first oxidant (e.g., the secondary air flow) is prevented. Consequently, at least a portion of the first oxidant (e.g., oxygen) “continues having the first oxygen concentration,” as stated in claim 1.

As shown in Figures 6A-6C and discussed in paragraphs [0072] through [0075], the lance 17 may be positioned at different locations within the secondary air inlet 18 to facilitate selective oxygen enrichment in localized regions of the barrel 20. Because the discharge of the lance is close to the entry of the barrel, there is a delayed introduction of the stream of the second oxidant (e.g., oxygen) into the stream of the first oxidant (e.g., air), which does not provide for enough residence time to complete mixing of the two oxidants prior to their entry into the barrel. Consequently, a portion of the first oxidant will remain at the first oxygen concentration (e.g., about 21 vol. % for air), while another portion near the exit of lance 17 will have a higher oxygen concentration (*i.e.*, the “combined oxygen concentration greater than the first oxygen concentration and less than the second oxygen concentration”).

Figures 3A-3F, 4A-4B, and 5A-5D illustrate other embodiments in which the stream of the second oxidant (e.g., oxygen) is fed into the barrel of the cyclone combustor in “a selective manner.”² In the various embodiments shown in Figures 3A through 5D, the stream of the second oxidant is fed “away from” the stream of the first oxidant, which results in the desired effect of the claimed invention (including, but not limited to, that “at least a portion of the first oxidant from the at least one predominant stream of the first oxidant in the barrel of the cyclone combustor continues having the first oxygen concentration”).

² See paragraph [0021] in the specification regarding the term “selective manner” and the reference to Figures 3A-3F, 4A-4B, 5A-5D, and 6A-6C.

As discussed in paragraph [0065] of the application, in the embodiments shown in Figures 3A and 3B, a stream of oxygen (the “second oxidant”) is injected side-by-side with the primary air/coal stream into the burner via conduit 13. In the embodiment shown in Figures 3C and 3D, a stream of oxygen is injected above the primary air/coal stream. In the embodiment shown in Figures 3E and 3F, the stream of oxygen is injected below the primary air/coal stream.

Different means are used for the “selective manner” of feeding the stream of the second oxidant (*e.g.*, oxygen) into the barrel of the cyclone combustor in the embodiments illustrated in Figures 4A through 5D. These are discussed in paragraphs [0066] through [0070] of the application.

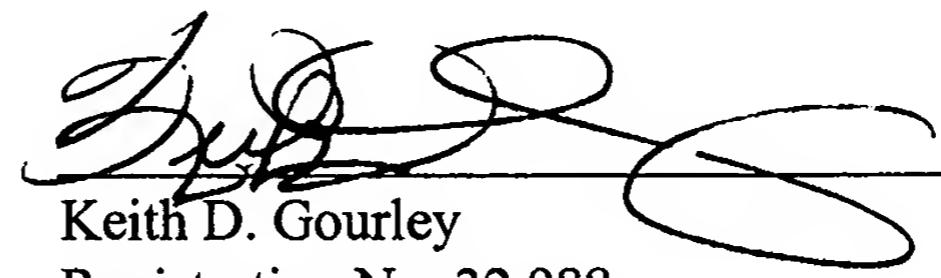
As stated in MPEP 2164.01(b), “As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C 112 is satisfied.” In the instant case, Applicants have disclosed not only one method for making and using the claimed invention, but have disclosed at least ten (10) embodiments for making and using their claimed invention.

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SUMMARY

For all of the foregoing reasons, Applicants submit that they have satisfied the enablement requirement, and all of the pending claims (1-36) are patentable over the prior art of record. Withdrawal of the rejections under § 112, first paragraph, and an early Notice of Allowance are earnestly solicited.

Respectfully submitted,



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